

## CLAIMS

We claim:

1           1.     A method of making a phase angle correction in a phase tracking loop,  
2     comprising the steps of:

3                     calculating a phase angle error in a signal;

4                     calculating a decision value based upon a first path metric of a plurality of  
5     path metrics corresponding to a plurality of paths through a trellis decoder

6                     calculating a confidence value based upon the first path metric and a second  
7     path metric of the plurality of path metrics;

8                     adjusting the phase angle error based upon the confidence value and the  
9     decision value; and

10                    modifying the signal based upon the adjusted phase angle error.

1           2.     The method of claim 1, wherein the phase angle is calculated by a phase lock  
2     loop.

1           3.     The method of claim 1, wherein the signal is the output of a comb filter.

1           4.     The method of claim 1, wherein the signal is an Advanced Television Systems  
2     Committee (ATSC) signal.

1           5.     The method of claim 1, wherein the step of calculating the confidence value  
2     comprises the steps of:

3                     subtracting the second path metric from the first path metric to create a  
4     distance value; and

5 setting the confidence metric based upon the distance value.

1 6. The method of claim 5, wherein the first path metric is a best path metric and  
2 the second path metric is a second best path metric.

1 7. The method of claim 5, wherein the distance value is set to a first threshold  
2 value if the distance value is greater than a second threshold value.

1 8. The method of claim 1, wherein the step of calculating an confidence value is  
2 based upon a nominal trace-back length.

1 9. A soft trellis slicer, comprising:  
2 logic for calculating a plurality of path metrics of a signal based upon a  
3 plurality of possible paths of the signal through a trellis decoder;  
4 logic for setting a soft slicer decision value based upon a first path metric of  
5 the plurality of path metrics;  
6 logic for calculating a confidence value based upon a difference between the  
7 first path metric of the plurality of path metrics and a second path metric of the  
8 plurality of path metrics;  
9 a phase tracking loop, comprising:  
10 logic for calculating a phase angle error of the signal; and  
11 logic for adjusting the phase angle error based upon the soft slicer  
12 decision value and the confidence value.

1 10. The soft trellis slicer of claim 9, the phase tracking loop further comprising:

2 a phase lock loop for calculating the phase angle error.

1 11. The soft trellis slicer of claim 9, wherein the signal is the output of a comb  
2 filter.

1 12. The soft trellis slicer of claim 9, wherein the signal is an Advanced Television  
2 Systems Committee (ATSC) signal.

1 13. The soft trellis slicer of claim 9, wherein the confidence value is set to a first  
2 threshold value if the confidence value is greater than a second threshold value.

1 14. The soft trellis slicer of claim 9, wherein the first path metric is a best path  
2 metric and the second path metric is a second best path metric.

1 15. The soft trellis slicer of claim 9, wherein the logic for calculating the plurality  
2 of path metrics depends upon a nominal trace-back length.

1 16. A high definition television (HDTV) receiver, comprising:

2 a trellis decoder, the trellis decoder comprising:

3 a soft trellis slicer, comprising:

4 logic for calculating a plurality of path metrics of a signal based  
5 upon a plurality of possible paths of the signal through a trellis  
6 decoder;

7 logic for calculating a confidence value based upon a difference  
8 between a first path metric of the plurality of path metrics and a second

9 path metric of the plurality of path metrics;  
10 logic for setting a soft slicer decision value based upon the first  
11 path metric; and  
12 a phase tracking loop, comprising:  
13 logic for calculating a phase angle error of the signal; and  
14 logic for adjusting the phase angle error based upon the soft slicer  
15 decision value and the confidence value.

1 17. The HDTV receiver of claim 16, the phase tracking loop further comprising:  
2 a phase lock loop for calculating the phase angle error.

1 18. The HDTV receiver of claim 16, wherein the signal is the output of a comb  
2 filter.

1 19. The HDTV receiver of claim 16, wherein the confidence value is set to a  
2 threshold value if the confidence value is greater than the threshold value.

1 20. The HDTV receiver of claim 16, wherein the logic for calculating the plurality  
2 of path metrics depends upon a nominal trace-back length.